

# Addressing The Gynecologic Oncology Workforce Crisis in Malawi

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# Disclosures

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# Background: Country profile

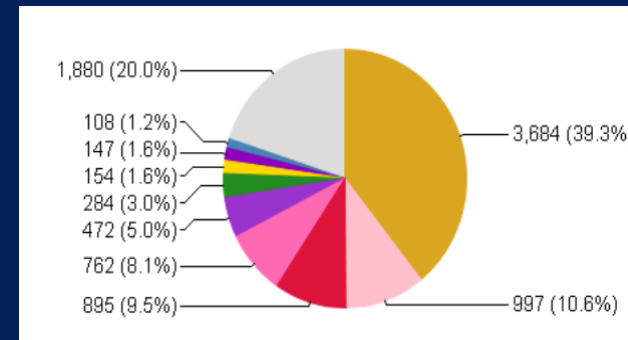
- Population: 18 million
  - 16.7 % urban
- Life expectancy: 54.8 years
- Poverty rate: 50.7%
- Female literacy rate: 57.2%
- National HIV prevalence: 9.1%
  - 20% among women 40-44 years [1,2]



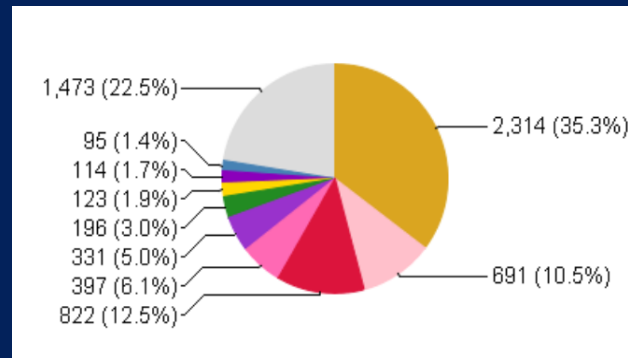
# Background: Cervical cancer in Malawi

- #1 cause of cancer-related death
- 40% of cancer cases and 35% of cancer deaths among women
- Estimated 3,684 women diagnosed with cervical cancer each year
  - 2,314 die from the disease annually
- Age standardized incidence rate (ASR) of 75.9 per 100,000
  - Highest in the world [3]

Cancer Incidence



Cancer Mortality



# Background: Cervical cancer control infrastructure

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- No national HPV vaccination program
- Very low screening coverage, 9%-27% between 2011-2015. [4]
- Only 1 certified gyn oncologist in the country
- No radiation therapy
- Very limited access to chemotherapy



# Method: Competency-based educational curriculum

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- In June 2015, 2 U.S. senior GYN oncologists implemented a novel curriculum to teach Malawian gynecologists to safely and effectively perform radical hysterectomy and pelvic lymphadenectomy:
  - Self-directed learning
  - Intense 5-day practicum
  - Continued clinical mentorship through e-based communication and quarterly visits





# Training Site: Kamuzu Central Hospital

- 1,000-bed public tertiary care hospital
- Serves 7 million people throughout Central and Northern Malawi



# Results: Surgical procedures (June 2015-Dec 2016)

- 24 patients underwent rad hyst & pelvic lymphadenectomy
  - Apprentice and Master Trainer - 8
  - Apprentice alone - 16
- Stage 1B1: (70%)
- Median age: 46 years (IQR 40-51 years)
- Median parity: 5 (IQR: 3-6)
- HIV positivity: (53%)

	Master Trainer & Apprentice (N=8)	Apprentice (N=16)
<b>Age (years)</b>		
≤ 40	1 (12.5)	5 (31.3)
> 40	7 (87.5)	11 (68.8)
<b>Parity</b>		
< 5	2 (25.0)	6 (37.5)
≥ 5	6 (75.0)	10 (62.5)
<b>Marital status</b>		
Single	0 (0.0)	1 (6.3)
Married	5 (62.5)	7 (43.8)
Widowed/divorced	1 (12.5)	4 (25.0)
Missing data	2 (25.0)	4 (25.0)
<b>HIV status</b>		
Negative	2 (25.0)	6 (37.5)
Positive	3 (37.5)	6 (37.5)
Missing data	3 (37.5)	4 (25.0)
<b>Clinical stage</b>		
1A2	2 (25.0)	0 (0.0)
1B1	2 (25.0)	12 (75.0)
1B2	2 (25.0)	0 (0.0)
2A1	2 (25.0)	3 (18.8)
Missing data	0 (0.0)	1 (6.3)
<b>Pre-operative HB</b>		
< 11g/dl	0 (0.0)	2 (12.5)
≥ 11g/dl	4 (50.0)	9 (56.3)
Missing data	4 (50.0)	5 (31.3)





# Results: Apprentice progression

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- After intense 5 - day practicum (8 cases): apprentice could safely and competently perform the surgical procedure
- At 3-month mentoring visit: apprentice independently performed the procedure on 5 cases
- At 6-month mentoring visit: apprentice began training others on 3 cases



# Results: Surgical outcomes

- Blood transfusion required in 12/16 (75%) cases, (8 had missing data)
- Parametrial involvement was histologically-confirmed in 1 of 18 cases (not reported in 6 cases)
- Intraoperative hemorrhage (1)
  - Positive pelvic lymph nodes; vascular and parametrial involvement
- Vesicovaginal fistula (1)
  - Resolved with continuous bladder drainage over 2 weeks

	Master Trainer & Apprentice (N=8)	Apprentice only (N=16)
<b>Blood Loss</b>		
< 1,000	1 (12.5)	4 (25.0)
≥ 1,000	2 (25.0)	6 (37.5)
Missing data	5 (62.5)	6 (37.5)
<b>Blood transfusion</b>		
No	2 (25.0)	2 (12.5)
Yes	2 (25.0)	10 (62.5)
Missing data	4 (50.0)	4 (25.0)
<b>Pelvic Lymph Nodes Positive</b>		
No	5 (62.5)	9 (56.3)
Yes	1 (12.5)	3 (18.8)
Missing data	2 (25.0)	4 (25.0)
<b>Vaginal Margin Negative</b>		
Yes	6 (75.0)	12 (75.0)
Missing data	2 (25.0)	4 (25.0)
<b>Parametrial Involvement Present</b>		
No	7 (88.0)	10 (62.5)
Yes	0 (0.0)	1 (6.3)
Missing data	1 (12.0)	5 (31.2)
<b>Post-Operative Histologic Findings</b>		
No residual disease	1 (12.5)	1 (6.3)
Cervical intraepithelial neoplasia (CIN) 3	0 (0.0)	1 (6.3)
Microinvasive carcinoma	0 (0.0)	1 (6.3)
Squamous cell carcinoma	4 (50.0)	10 (62.5)
Endometrioid adenocarcinoma	1 (12.5)	0 (0.0)
Missing data	2 (25.0)	3 (18.8)
<b>Post-Operative Complications</b>		
Infection	0 (0.0)	0 (0.0)
Hemorrhage	0 (0.0)	1 (6.3) <sup>†</sup>
Venous thromboembolism	0 (0.0)	0 (0.0)
Urologic injury	0 (0.0)	1 (6.3)*
Vascular injury	0 (0.0)	0 (0.0)
Intestinal injury	0 (0.0)	0 (0.0)

\*Vesicovaginal fistula diagnosed at day 10 post op; resolved with continuous catheterization.

<sup>†</sup>Hemorrhage: lost 4,000 ml of blood intraoperatively



# Discussion

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- Teaching a limited repertoire of oncologic surgical procedures targeting cancers that are both common and amenable to surgical cure
  - rapidly builds local surgical oncologic capacity
  - saves lives
  - can sustain and reproduce itself within the reality of its context
- Ancillary support such as adequate supply of blood, anesthesia, is critical to ensure patient safety
- This training approach can complement ongoing international efforts to expand formal gynecologic oncology training opportunities to physicians practising in LMICs



# Challenges and Future Directions

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- Scaling this training approach through a regional center of excellence
- Adding other relevant surgical procedures, e.g., radical vulvectomy and inguino-femoral lymphadenectomy
- Recruiting additional surgical mentors who have the surgical skills to perform open procedures and to operate on large lesions
- Improving pathology support



# References

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3. International Agency for Research on Cancer (IARC), World Health Organization (WHO). GLOBOCAN 2012: estimated cancer incidence, mortality and prevalence worldwide in 2012: cancer fact sheets: cervical cancer. Lyon: IARC; 2014
4. Msyamboza KS et al. Cervical cancer screening uptake and challenges in Malawi from 2011 to 2015: retrospective cohort study. BMC Public Health (2016) 16:806 . DOI 10.1186/s12889-016-3530-y



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